



Role of NGOs in Enhancing Community Resilience: A Study on Three Climate Hotspots in Bangladesh

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ABSTRACT

This study aimed to explore the role of non-governmental organizations (NGOs) in enhancing community resilience in three climate hotspots in Bangladesh. The study adopted a qualitative interpretive phenomenological research approach in which the data were analyzed using NVivo-12 software and the Granheim approach by thematic design. However, we chose the purposive sampling technique in this study and conducted 60 face-to-face in-depth interviews, 3 FGDs, and 11 KIIs with participant's observation. The study found that NGOs played a crucial role in promoting access to social and economic opportunities, capacity development on climate action and disaster preparedness, and access to information. Sustainability issues and sustainable activities were also identified as critical areas where NGOs contributed to enhancing community resilience. A strong foundation of community-based organizations (CBOs) was necessary for effective NGO interventions. Furthermore, the study revealed that NGOs facilitated access to rights and fostered income-generating activities (IGAs) through market linkage, which enabled communities to adapt to changing climate conditions. NGOs played a crucial role in promoting the adoption of technology for climate adaptation, as well as nurturing Water, Sanitation, and Hygiene (WASH) enterprises. The findings could inform the development of effective policies and strategies to enhance community resilience in Bangladesh and other vulnerable areas. The findings of this study have significant policy implications for enhancing community resilience in vulnerable areas of Bangladesh. Policymakers should recognize and support the critical role of NGOs in enhancing community resilience and allocate adequate resources for their interventions.

INTRODUCTION

Climate change has significant impacts on the environment, society, and the global economy (Kasperson et al., 2022; Auffhammer, 2018; Lindwall, 2022). These impacts have created numerous challenges for communities worldwide, threatening their resilience and ability to withstand natural disasters such as hurricanes, droughts, heatwaves, erosion of coastlines, and flooding of low-lying areas. Additionally, communities face poverty, inequality, damage to crops, and loss of income, which can lead to loss of life, displacement of people, and damage to infrastructure and property (Hallegatte et al., 2016; Nemeth & Olivier, 2017). Non-governmental organizations (NGOs) play a crucial role in enhancing community resilience globally by working with local communities to address these challenges. NGOs collaborate with communities to increase their capacity to prepare for and respond to emergencies, promote sustainable development, and reduce the impacts of crises and disasters on vulnerable communities worldwide. Community resilience refers to a community's ability to respond and



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recover from natural and man-made disasters, crises, and shocks (UNDRR, 2017; Lassa, 2018). NGOs, such as the International Federation of Red Cross and Red Crescent Societies, CARE International, and Oxfam, are among the large international organizations that work towards supporting community resilience worldwide (Islam & Walkerden, 2015; Ahmed & Khan, 2022). These organizations provide critical support and resources to communities to help them withstand and recover from disasters and crises, thus contributing to a more resilient and sustainable future.

Bangladesh is highly susceptible to climate-induced natural disasters. Due to its geographic location and the effects of climate change, the country is prone to a range of extreme weather-related events, including floods, tropical cyclones, storm surges, riverbank erosion, and droughts (Ahmed & Khan, 2022). Additionally, Bangladesh is home to the largest delta in the world, consisting of the Lower Ganges, the Brahmaputra, and the Meghna River basins, which makes a significant portion of its land area prone to frequent flooding, especially flash floods and river erosion (Rahman & Siddiq, 2021). Climate-induced disasters, particularly floods, pose a significant threat to the country due to the potential for massive loss of life and livelihoods. This situation reduces community resilience, defined as "the existence, development, and engagement of community resources by community members to thrive in an environment characterized by change, uncertainty, unpredictability, and surprise" (Magis, 2010). In response to this concern, several NGOs in Bangladesh have developed policies and institutional responses to address the adverse effects of climate change (Patra et al., 2016). NGOs in Bangladesh play a vital role in enhancing community resilience and mitigating the impacts of climate-induced disasters. These organizations work closely with local communities to prepare for and respond to emergencies, build resilience, promote sustainable development, and reduce the impacts of crises and disasters on vulnerable communities (Patra et al., 2016). Some examples of NGOs working in Bangladesh include the Bangladesh Red Crescent Society, the Christian Commission for Development in Bangladesh, and the World Vision Bangladesh, which work to support community resilience and address the adverse effects of climate change (Ahmed & Khan, 2022). By working together with local communities, NGOs can effectively enhance community resilience and reduce the impacts of climate-induced disasters in Bangladesh.

METHODS AND MATERIAL

Study area and settings

The study was conducted in three vulnerable climatic hotspots in Bangladesh: Char, Haor, and the Coast regions. Three unions under three Upazilas were selected for the study. The Char lands, Haor regions, and coastal areas are vulnerable to climate change impacts, threatening the livelihoods of local communities. Projects like IFRP, REECALL-2021, and SCCADR were implemented to mitigate flood, erosion, cyclone, and storm surge risks. These areas lack resources, services, and face extreme poverty, making the projects necessary to improve their resilience against natural disasters and climate change.

Research approach

We used a qualitative phenomenology research design to achieve the study objective. A qualitative phenomenology research method is appropriate to understand phenomena

from the participant’s perspective (McCaslin, 2003). The qualitative phenomenological research approach also provides detailed explanations of interest (Forbes, 2015). Because it focuses on how people interpret and understand their experiences in which they live and human experience through participant descriptions (Nieswiadomy & Bailey, 2018).

Study design and sample size

Several researchers offer a variety of guidelines for choosing sample sizes for qualitative studies. Creswell (1994) and Sandelowski (1995) recommended 10 sample size, Bertaux (1981), revised in Guest and MacQueen (1990), emphasized that 15 respondents are suitable for the systematic selection of qualitative case studies for each qualitative research (Bertaux, 1981; Guest, G., MacQueen, 1990; Barrot et al., 2021; Dane, 1990; Guest et al., 2006). Furthermore, Charmaz (2016) stated 25 participants is appropriate for small projects (Charmaz, 2016). On the other hand, Guest et al. (2006) noted that larger sample sizes can increase the credibility and generalizability of qualitative research (Guest et al., 2006). However, we chose the purposive sampling technique in this study and conducted 60 face-to-face in-depth interviews, 3 FGDs, and 11 KIIs with participant’s observation.

Data collection and instruments

We used a semi-structured interview because it effectively contributes to a deeper understanding of research questions (Catterall, 2000). Three pilot interviews were conducted at the field level to further refine the questionnaire. Researchers adjusted the interview questions to align with the specific context. The interview guidelines were developed through three rounds of consultation, a common practice in qualitative research (Hecht et al., 2019). The interviews were recorded using a mobile device, with individual interviews lasting between 38 and 86 minutes, while the FGD recordings ranged from 51 to 98 minutes. Researchers carefully observed respondents' working environments, expressions, attitudes, and tones. The recorded interviews were later transcribed with precision and cross-checked by other researchers to ensure accuracy. Table 1 provides an overview of the data collection process and instruments used.

Table 1: Data Collection Instruments

| Data Collection Methods | Instruments | Total units |
|-------------------------|-------------|------------------------|
| In-depth Interview | Guideline | 45 (15 from each area) |
| FGD | Checklist | 3 (1 from each area) |
| KII | Guideline | 12 (4 from each area) |

Data collection and instruments

The author took a thematic approach in coding and analyzed data through an integration of inductive and deductive approaches (Boyatzis, 1998; Crabtree, 1999). The authors utilized Graneheim & Lundman (2004) to undertake data analysis, processing, and coding. Data analysis in social science and public health studies is a common practice (Graneheim & Lundman, 2004). Generally, the data analysis was primarily guided by the content analysis model proposed by Graneheim and Lundman. As discussed by Graneheim and Lundman, qualitative content analysis approaches focus on examining a

text's explicit or manifest content, as well as interpreting its 'latent content.' Table 2 illustrates the data analysis procedures used.

Table 2: Thematic data analysis procedure using Granheim and Lundman approach

| Steps | Description |
|--|---|
| 1. Interview transcription | Interviews were recorded and replayed multiple times to gain a comprehensive understanding of the content. |
| 2. Unit for the formation of meaning analysis | All interviews were treated as a single unit for analysis, with primary codes established by identifying and abstracting meaning units. |
| 3. Comprehensive classification of similar codes | Similar foundational codes were grouped into broader, more inclusive categories. |
| 4. Comparison of codes and establishment of subcategories | In contrast, all codes and data identified similarities and differences. This process resulted in the formation of categories and subcategories. |
| 5. Comparing subcategories and establishing primary categories | The initial interviews produced a preliminary set of codes, categories, and subcategories, with emerging patterns considered as key results of the thematic analysis process. |

Using NVivo 12, data was thematically coded and managed for reliable and valid results. Data was stored separately and triangulated by nature, type, and features. Investigator and data source triangulation were used to reduce bias (Patton, 2002). Data was collected through in-depth interviews, FGD, KII, and participant observation for high study quality.

RESULT AND DISCUSSION

The long-term outcomes of NGOs in enhancing community resilience in Bangladesh involve building the capacity of communities to anticipate, withstand, and recover from shocks and stresses (Uddin et al., 2020; Singh, 2014; Mohinuddin, 2022). By addressing various dimensions of resilience, NGOs contribute to the sustainable development and well-being of communities in the face of multiple challenges. The research uncovered four long-term results.

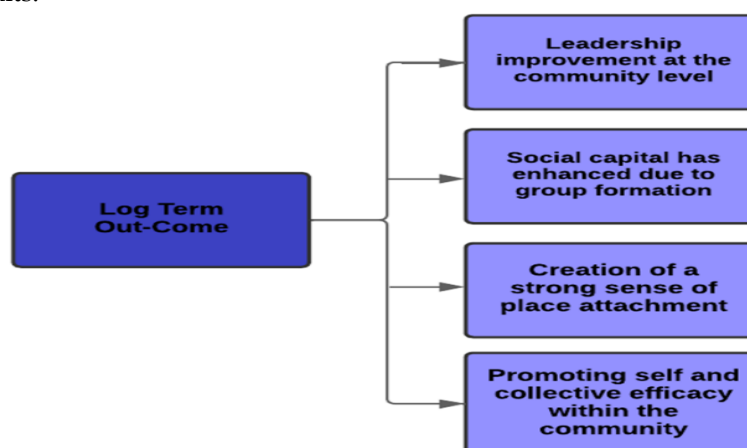


Figure 1: Log Term Out-Come

LOG TERM OUT-COME

Leadership improvement at the community level

NGOs embody the ethos of servant leadership and can enhance leadership in disaster-prone areas through the creation of Community-Based Organizations (CBOs) (Uddin et al., 2020; Singh, 2014). CBOs empower marginalized groups to access services and negotiate with government institutions, including female-led CBOs, which have successfully established networks with elected officials and increased women's mobility within their communities. Overall, CBOs have successfully established networks with local government institutions. Moreover, there is a strong linkage between project staff and CBO leaders, which has had a positive impact on the adaptive capacity of communities. Community-Based Adaptation interventions in the projects have aimed to raise awareness among CBO members and leaders, empowering them to hold elected representatives and appointed officials accountable for better service delivery. Secondly, the projects have sought to raise awareness among women by organizing various training sessions and meetings at the Union Parishad office, which have created a space for building networks between citizens and elected representatives. CBO leaders (KII;10) said that "a network had developed with the local government institutions due to recurrent participation in project activities in which project staff was actively involved." CBO leaders expect such networks will not cease immediately after the project is phased out. One of the CBO leaders pointed out:

"We hope that the elected representatives of the Union Parishad will continue to listen to our voices and be responsive to our needs even after the project activities have stopped. We are confident they will remember us and remain committed to our well-being. We hope that they will keep us informed of any changes that may affect our lives and that they will work to ensure that our rights and interests are respected and protected." (KII #10; CBO leader)

A similar report we got from a number of participants (P5, P32, P41, P55) stated that

"We have noticed a significant improvement in the leadership skills of our community members since the NGOs started working with us. They have provided us with training on various aspects of leadership, such as conflict resolution, decision-making, and communication. This has helped our leaders become more effective and work together to better the community".

Social capital has enhanced due to group formation

Strong social capital can facilitate communities in responding to and adapting to the consequences of changing weather patterns and other environmental stressors (Guardaro et al., 2022). The projects discussed in this study have demonstrated a positive impact on bridging and linking social capital. Qualitative data analysis has revealed that the project interventions have contributed significantly to this positive effect. In this case, P19, P21, P33, and P49 reported that,

"Through our involvement in the project, we have built a network of like-minded individuals. This has enhanced our social capital, as we now have access to diverse resources, knowledge, and support that we can draw upon to achieve our goals".

The formation of Community-Based Organizations (CBOs) was aimed at empowering communities to achieve self-sufficiency and to be capable of handling climate-related risks even after the project had ended (Datta, 2007). The activities undertaken by the CBOs have significantly contributed to strengthening the social capital of the communities. The communities are now equipped with the essential resources, skills, and networks necessary to address the challenges posed by climate change effectively. When CBO members were asked to comment on the status of relationships within the groups, they noted that,

“They had become closer, more collaborative, and more supportive of one another.” (KII #10; CBO members)

REECALL 2021 project established Community-Based Organizations (CBOs) and groups such as Women's Working Platform, Adda, Youth Group, Producer Group, Child Group, and Food Bank Management Group, resulting in a positive impact on socio-economic conditions and promoting unity in the community to face climate change and disasters (Seddiky et al., 2022).

Participants in our study have reported that the group members have become more comfortable expressing and sharing their opinions and are now more open to receiving feedback and considering different perspectives. Overall, the members felt that the group had successfully created an atmosphere of trust and respect, which enabled them to develop strong relationships. For example, one group member stated that,

“Relationships with each other have become more cordial. If I get any news (from project staff), I inform other members, and everyone does the same in our group.”

Furthermore, it was noted in several Focus Group Discussions (FGDs) that the project interventions have contributed to strengthening social bonds and networks within the communities. Participants, including both men and women, expressed that prior to the project, their social efforts were often isolated, fragmented, and disjointed. However, since the implementation of the project, participants reported spending much more time interacting with their neighbors, resulting in improved communication and information sharing.

Creation of a strong sense of place attachment

The implementation of project activities effectively nurtured a heightened sense of place attachment among community members (Gurney et al., 2017). The study findings reveal that individuals and households have developed a stronger emotional bond with the community and its natural surroundings by actively participating in activities that promote a deeper connection to their local environment. It is noteworthy that the beneficiaries of these projects were selected through participatory approaches, and relevant stakeholders such as local government, local institutions, civil society organizations, technical institutions, and like-minded organizations were involved in different phases of the project, including project design, location, beneficiary selection, project activities, and project evaluation. KII#11, as an academican mentionend that “in the REECALL-2021 project context, the CBOs practiced ‘Participatory Capacity and Vulnerability Assessment (PCVA) and developed community-specific action and resource plans.” As per Oxfam's report in 2012, the Participatory Capacity and Vulnerability Assessment (PCVA) process mainly focused on various aspects such as

improving the strength of embankments, constructing cyclone shelters, raising roads and plinths, installing tube-wells and cubical baths, re-excavating ponds, raising awareness on Water, Sanitation, and Hygiene (WASH) and climate change, and addressing gender-based violence, as well as empowering women, among other interventions. The results of these interventions were observed in the functional Community-Based Organizations (CBOs) that were able to address WASH issues in their respective localities. In this regard, P6, P9, P39, P50 stated that

“This project has highlighted our community’s distinct climate change challenges and showcased our resilience through collaboration. Witnessing the positive impact of our efforts has fueled pride and a sense of ownership. It motivates us to further invest in our community and strengthen our resilience for the future.”

Moreover, CBOs built a horizontal relationship among the community by assessing the community demand for WASH needs, disaster preparedness activities, coordinating and participating in repairing and maintaining the facilities, and courtyard meetings to be aware of climate change and DRR issues. As part of the FGD #3 assessment of the youth group said:

“We find out the problems through monthly meetings and inform CBO about the identified problems”.

Promoting self and collective efficacy within the community

CBOs developed by projects are important for fostering individual and group effectiveness in a community (Dongier, 2002). The programs see CBOs as a long-term method of bringing the challenges of disadvantaged people to the attention of local government and non-governmental parties. KII #3 said that,

“CBOs have demonstrated an increasing ability to engage with stakeholders to solve problems.”

It is evident that the CBOs created under the mentioned projects organize and sensitize vulnerable people about their entitlements. In addition, they represent the community in demanding services from and negotiating with Union Parishad and Upazila level line departments. P19-P23, P45, and P51 mentioned that,

“Earlier, we were unable to go to the Union Parishad or other government offices, we did not dare to talk with them and demand service, but now we know about our rights; we have also learned how to contact the local government bodies (e.g., Union Parishad) and line departments at the Upazila level and how to seek service from them.”

During the interview FGD #2; with the CBO leaders, it was revealed that they are trying to bring the marginalized section of society under social safety net schemes. They work in groups in the targeted communities, unaware of the local government services. If anyone complains regarding access to social safety nets, they negotiate with local government representatives. Moreover, they sit for several meetings with the Union Parishad representatives in a month to establish the rights of the marginalized section of society.

Empowering community members through Community Based Organisations (CBOs)

can promote a sense of self-efficacy and the belief that individuals can make a difference. Ani et al. (2018) reported similar findings that members of a women's group, PWPK, acquired self-efficacy, self-esteem, and proactive behavior after joining a CBO (Ani et al., 2018). This increase in resilience capacity was observed over the project period in the project areas. Qualitative data from the project areas revealed that people believed hard work was a better strategy for dealing with shocks and stresses, and relying on destiny was not sufficient. Interestingly, people strongly believed that climatic disasters might be an act of God, but they still emphasized the importance of helping themselves rather than relying on divine intervention to deal with disasters successfully. A FGD participant said,

“It is important to remember that God can help us, but we must also take action to deal effectively with the stresses and shocks of life. We cannot simply sit idle and expect our problems to be solved miraculously. Instead, we must work hard and believe God will help us through whatever challenge we face”.

Short Term Out-Comes

NGOs have played a significant role in building the resilience of communities in Bangladesh, and in improving the lives of millions of people (Ani et al., 2018; Baser & Hasnath, 2016; BDRCS, 2018). They have done this by providing a range of services which is described in figure 2. These short-term outcomes collectively contribute to enhancing community resilience in Bangladesh by building knowledge, skills, capacities, and immediate response mechanisms (BRAC, 2020; HCTT, 2018). They lay the groundwork for long-term resilience and sustainable development.

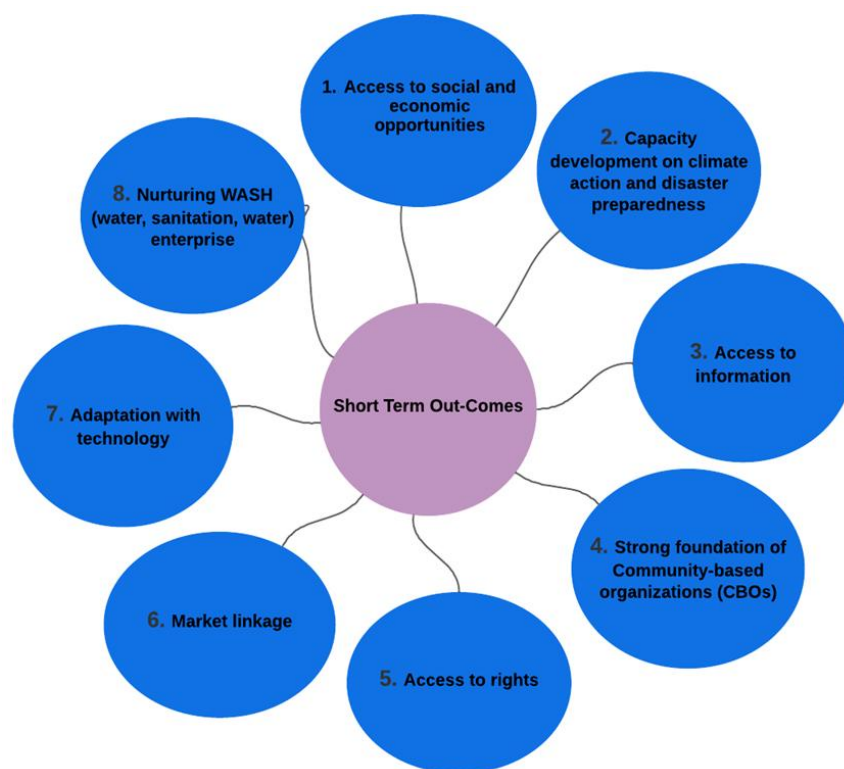


Figure 2: Short-Term Out-Come

Access to social and economic opportunities

According to the World Bank, the projects have enabled the targeted beneficiaries to access social and economic opportunities, thereby empowering them (World Bank, 2019). Group members must have confidence in the long-term viability of the economic activities supported by the projects. Such confidence is largely due to the improvements in value chains and market linkages, as well as the appropriateness of technologies employed (e.g., improved seeds). Furthermore, the projects have facilitated greater participation of women in dairy and livestock activities, market stalls, specialized crafts activities linked to buyers, and niche vegetable/spice production.

Our respondents of FGD #3 and KII #11 narrated it like

“At the end of the projects, changes were observed in three economic sources of resilience capacity: livelihood diversity, asset ownership, and access to financial resources. Livelihood diversity has increased during the project period. Many households now participate in milk and livestock trading to supplement their income. Women are also involved in selling milk, tea, petty trade, or running small shops where household items can be bought (e.g., soap, salt, etc).”

Qualitative data suggest that communities in project areas are now more aware of the importance of livelihood diversification than before. Furthermore, the attention paid to value chain linkages in the economic activities supported at the village level means that these also have a good chance of being sustainable and leveraging positive returns for the resources invested in them. For example, the households who could not secure their daily needs in terms of food, clothes, and medicine before livelihood support but some of them have bought ornaments and land and also bought more cattle after securing their daily foods and other domestic purposes utilizing the livelihood support. Similar message we found in our neighboring country India that CCD project helps small and marginal farmers by improving their livelihood (Centre for Collective Development, 2021).

Regarding asset ownership, the study found a moderate increase in the ownership of assets, which households can use to increase income and as a buffer against shocks. Finally, in the context of financial resources, it has been found that access to financial resources has increased in the poor rural households in the project areas. According to the FGD #2, almost no households in the project areas had access to credit and savings at the initial stage of the projects. However, by the end line of the projects, roughly three-quarters of the households have access to credit, and a significant number of households have access to savings.” According to the views expressed in Kenya, NGO programs that raise revenue as a result of an increase in the value of transferred assets lessen severe poverty (Moquet, 2019).

Capacity development on climate action and disaster preparedness

Climate change adaptation and mitigation were addressed in the projects through climate insurance schemes and multi-stakeholder platforms. Disaster risk reduction was a focus, with localization of early warning indicators and disaster risk reduction plans for households. Achieving a sustainable future for all requires the prevention, reduction, and management of risk and response to extreme phenomena, as emphasized by the Global Platform for Disaster Risk Reduction (Tardy, 2022). The project strengthened community resilience through UDMCs, disaster preparedness, and WASH improvements, including community-managed infrastructure and sanitation marketing. The project increased

disaster preparedness and mitigation, contributing to a sustainable future for all. Despite repeated climate-induced natural disasters, the availability of disaster response has increased, with communities better prepared to predict and respond to natural hazards through community and household preparedness measures, as reported by most FGD respondents. CBO leaders, (KII #9) group members, and local elected officials claimed that

“The overall resilience and preparedness of target communities to cope with climate-induced natural disasters were maintained.”

Several CBO leaders detailed how villagers were warned and measures to avoid casualties and damage to humans and livestock. During visiting communities, it was easy to recognize high levels of knowledge on several subjects, including disaster risk reduction, sanitation and hygiene, and livelihoods. Through different sessions, the beneficiaries have raised awareness of disaster preparedness and have taken many precautions to cope with disasters. This learning obviously brings a sustainable change in the community.

Access to information

Access to information at the household level in the intervention areas has seen more significant improvements (Haque, 2011). Information access is stated to have been significantly lower in intervention areas compared to when the project started. Nevertheless, in intervention areas, access to information regarding market price (e.g., animals, animals' products, foods) ranked one of the most utilized information, with information concerning disease danger in animals ranking second. Qualitative information reports access to over one source of information pertaining to weather forecasts (i.e., early warning) and information for creating awareness and behavior change in human and animals' health practices, disaster preparedness, and mitigation. In this regard, community leaders (KII #6) generally stated that,

“NGO projects as important contributors to enhancing climate resilience in their communities. In addition, NGOs are critical in providing resources and often support lacking in rural areas, where communities have limited access to information, technology, and funding.”

NGO projects help rural communities to develop and implement climate resilience strategies tailored to their needs and challenges (UNDP, 2023). To show an example we mentioned P5, P33, P41 & P50 speeches,

“NGO projects engage communities to develop early warning systems for natural disasters, build infrastructure that is more resilient to the impacts of climate change, or provide training on sustainable agriculture and land use practices.”

Strong foundation of Community-Based Organizations (CBOs)

Community-based organizations (CBOs) have played a critical role in the success of the aforementioned projects. While their impact may be more evident at the local level, they have also initiated forums and dialogues at the national level. As a step towards sustainability, some CBOs have already obtained government registration. The registration of CBOs has provided them with a legal basis, created confidence in them, and potentially opened up opportunities for accessing resources from other sources, such as different government agencies. It is expected that this strong foundation will go a long way toward ensuring the sustainability of the CBOs beyond the project. Furthermore, the CBOs

have established relationships with the local government, where their contributions, particularly in disaster risk reduction and response, as well as the implementation of social safety net programs, have come to be valued by local government functionaries. Their local knowledge and capacity were instrumental in bringing community issues to the attention of local government representatives. This has contributed to the enhanced acceptance of the CBOs' role in the community and local government functions. In this regard KII #2, KII #7 and FGD #3 reported that,

“CBOs have been a cornerstone of the mentioned projects, initiating forums and dialogues at the national level and obtaining government registration. They have established a relationship with the local government where their contributions, particularly in disaster risk reduction and response and implementation of social safety net programs, have been valued.”

Additionally, mobile banking has made it simpler and more secure for farmers to access financial services, enhancing their ability to support their farming operations and supplement their income. According to research by Moreno et al. (2017) and Maciej Serda et al. (2013), NGOs are essential to helping CBOs in Pakistan and China strengthen their capacity and participate in community development initiatives (Moqueet,2019; Tardy,2022).

Access to rights

The interventions undertaken by the project have contributed significantly towards raising awareness among the beneficiaries about their rights, social issues, disaster preparedness, hygiene, and other pertinent matters. Of particular interest is the fact that the poor, underprivileged community had not had access to their rights before the commencement of the project. However, since the project's inception, the community has become more aware of pertinent issues such as health, hygiene, and education, among others. Such learning and awareness have undoubtedly engendered sustainable change in the community. In this regard, P5, P9, and P17 said to us that,

“They are now more concerned than ever before with their children's education, good hygiene habits, access to clean water, and illness prevention.”

Similar outcomes were reached in the study by Rahman et al. (2022), which showed that NGOs were crucial in delivering disaster risk reduction (DRR) training and information to vulnerable people in Bangladesh (Usama et al., 2022). They were more resilient and disaster-ready as a result of this. The programs produce resources, raise awareness, and encourage community engagement (Nikkhah & Redzuan, 2010).

Market linkage

The program's engagement of multi-stakeholder fora has facilitated the development of linkages between beneficiaries and various markets, producers, and traders (UNESCO, 2020). This has addressed some of the structural challenges that rural entrepreneurs encounter when establishing linkages and synergies. Beneficiaries have begun to reap the benefits of these multi-faceted interventions, as evidenced by increased household income during the study period. The sustainability of this practice is expected to continue beyond the project's duration. Similar overview we got from KII #3 as like,

“The program's multi-stakeholder fora have successfully connected beneficiaries

with markets, producers, and traders. This has resolved structural barriers faced by rural entrepreneurs, enabling the development of synergies and partnerships. Consequently, beneficiaries have observed positive impacts, such as increased household income. This practice is projected to persist post-project, fostering sustainable development in the region.”

According to Forstner, (2004), NGOs can help facilitate market entry for CBT initiatives by Forstner, (2004).

Adaptation with Technology

Technology is considered a powerful tool that can provide access to key information, leading to equity (Biagini et al., 2014; OECD, 2001). Although still in its early stages, technology has the potential to make a lasting impact and scale up organically with the right adjustments. In Bangladesh, the digitization process has led to the creation of user-friendly apps that support poor farmers and vulnerable groups in agriculture, aquaculture, and other farming activities. Mobile banking services can also accelerate digital financial support, which can be provided directly to their doorstep, avoiding potentially fraudulent activities by market actors and other malicious individuals. Such technological advancements play a significant role in enhancing community resilience. Biagini et al. (2014) also found that technology transfer during climate change helps communities adapt to various projects (Biagini et al., 2014). In this regard, P28, P36, P50, P57 & P60 reported that,

“Thanks to NGOs, we now have mobile phones and apps that make accessing farming information effortless. We can get weather forecasts, market prices, and pest management tips. Mobile banking also helps us easily and securely access financial services, supporting our farming and improving our lives.”

These technologies have aided in empowering farmers and encouraging rural regions' sustainable development (OECD, 2001).

Nurturing WASH (water, sanitation, water) enterprise

NGOs play an essential role in providing WASH services to rural communities in Southeast Asia and Pacific Islands (Carrard et al., 2009). Their interventions have been well-received and appreciated by the beneficiaries, with community leaders recognizing the tangible benefits of improved infrastructure and increased access to WASH. The program has also aimed to address the supply side of WASH behaviors by promoting women-led entrepreneurial interventions to increase sustainability. However, more consultations are needed to address concerns and challenges, particularly regarding environmental issues, to ensure the interventions' viability. Regular practice and close supervision by assigned subgroups are also crucial for sustainable interventions. Our 14 participants, KII #11, and some of the FGD participants said as like,

“They appreciated the practical benefits that NGO projects already brought to their communities, such as increased access to WASH or better infrastructure. They also valued the knowledge and expertise that NGO projects brought to the communities, particularly in disaster risk reduction, climate-smart agriculture, and community-based adaptation.”

According to UNICEF, (2016) the role of NGOs in WASH in peacebuilding, disaster risk

reduction, climate change adaptation, and environmental protection is fundamental to building resilience.

CONCLUSION

Investigating the role of NGOs in enhancing community resilience in disaster-prone areas due to climate change, the present study employed a qualitative research approach, purposively selecting three areas from the Chittagong hill tracks in Bangladesh. The study utilized 60 semi-structured in-depth interviews, 11 key informant interviews (KIIs), 3 focus group discussions (FGDs), and participant observation to achieve the research objectives. The thematic data analysis was conducted using the Granheim method and NVivo-12 software.

The study focused on two central themes, namely Long-term Outcomes and Short-term Outcomes, that positively impact the community. The Long-term Outcomes include leadership improvement at the community level, enhanced social capital through group formation, creation of a strong sense of place attachment, and promotion of self and collective efficacy within the community. On the other hand, the Short-term Outcomes involve access to social and economic opportunities, capacity development on climate action and disaster preparedness, access to information, a strong foundation of Community-based Organizations (CBOs), access to rights, market linkage, adaptation with technology, and nurturing WASH enterprise. The implementation of these outcomes has a positive impact on the community in the long and short term. The study must acknowledge limitations. The author didn't consider a large quantitative sample which might weakness limitations. Researchers should consider a large sample for future research.

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DECLARATION OF COMPETING INTEREST

The authors declare that no conflict of interest exists.

AUTHORS' CONTRIBUTIONS

MMR initiated the conceptualization of the study. MKS and MSS collected the data and MMR, MSS, and MKS processed the data, performed analysis, and wrote the manuscript. MMR and MSS sort out the data visualization, and supervision. MMR, MSS, and MKS revised the manuscript. All authors read and approved the final manuscript.

ETHICAL APPROVAL AND CONSENT

The study was approved by the Institutional Ethical Review Board (Protocol No. Ethics/salman8/2022) associated with the Faculty of Humanities and Social Science at Daffodil International University, located in Dhaka -1212, Bangladesh.

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